THE STABILITY OF DEPOT FAT FROM BROILERS FED RATIONS CONTAINING ANIMAL FATS TREATED WITH VARIOUS ANTIOXIDANTS*

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Previous results have shown that stabilized animal fat increases the stability of vitamin A and carotene during storage (Siedler *et al.*, 1957). These studies have been extended to include the effects of feeding stabilized animal fat on the AOM stability of the rendered depot fat of broilers.

The four experimental basal feeds used in these studies have been reported previously (Siedler *et al.*, 1957). These feeds were supplemented with either no animal fat, 6% unstabilized animal fat, or 6% animal fat stabilized with 0.02% Santoquin (6-ethoxy-2,2,4-trimethyl-1,2-dihydroquinoline), 0.02% BHT (ditertiarybutyl-para-cresol), or 0.02% DPPD (diphenyl-para-phenylenediamine). Citric acid was added at a level of 0.01% to all the antioxidant treated fat. The animal fat used was a blend of choice white grease and choice tallow. Twenty-five White Rock cockerels were fed the experimental feed *ad libitum* for nine weeks in duplicate experiments.

Ten chicks from each group were sacrificed and the depot fats were rendered by homogenizing the depot tissue in a Waring Blendor with Skellysolve B, heating (ca. 80°C.) for one-half hour, filtering through anhydrous $NaSO_4$ and reheating until the solvent vapors were not detectable.

The AOM stabilities of the depot fats from each group showed that little or no increase in stability occurred when either stabilized or unstabilized animal fat was added to the diet at the levels tested. The maximum range in AOM stability was from 2–5 hours for the controls (no added fat) to 10 hours for several groups containing stabilized or unstabilized animal fat. However, this effect was not consistent for all groups.

Klose *et al.* (1952) and Schweigert and Siedler (1954) have reported that the carcass fat of chicks and turkeys tends to reflect the composition of the dietary fat. Klose *et al.* (1951, 1953) have also reported that the keeping quality of the carcass fat of turkeys was improved when the feeds contained beef fat as compared to feeds containing highly unsaturated fats.

The groups fed added fat appeared to have a higher degree of carcass finish and

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the amount of depot fat obtained from these birds was approximately twice that obtained from the birds fed the basal diet. Pigmentation was not affected by the various fat-antioxidant treatments and there were no significant differences in flavor between any of the groups tested.

REFERENCES

Klose, A. A., E. P. Mecchi, G. A. Behman, H. Lineweaver, F. H. Kratzer and D. Williams, 1952. Chemical characteristics of turkey carcass fat as a function of dietary fat. Poultry Sci. 31: 354–359.

Klose, A. A., E. P. Mecchi, G. A. Behman, H. Lineweaver, F. H. Kratzer and D. Williams, 1951. Chemical characteristics of turkey carcass fat as a function of dietary fat. J. Amer. Oil Chem. Soc. 28: 192–194.

Klose, A. A., H. L. Hanson, E. P. Mecchi, J. H. Anderson, I. V. Streeter and H. Lineweaver, 1953. Quality and stability of turkeys as a function of dietary fat. Poultry Sci. 32: 82–88.

Schweigert, B. S., and A. J. Siedler, 1954. Use of animal fats in poultry and dog rations. J. Amer. Oil Chem. Soc. 31: 52–53.

Siedler, A. J., Erica Enzer, B. S. Schweigert and R. W. Riemenschneider. 1957. Vitamin A stabilization of feeds. J. Agric. Food Chem., in press.